

**EOSDIS TEST VERSION
COMPONENT ACCEPTANCE TEST PROCEDURES
FOR
ECS IR1**

Review
(Deliverable 1004 Task 10C)

December 15, 1995

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Introduction

This document supplies the test procedures to implement the EOSDIS Test Version Component Acceptance Test (AT) program described in the EOSDIS Test Version Component Acceptance Test Plan (IV&V Contractor Deliverable 1003).

The EOSDIS Test Version Component AT Program is organized into four test categories comprised of 32 tests. For each test, the following is provided:

- A brief description of the test and the test objectives
- Test Configuration specifications
- Test Data listings
- Test Procedures, including steps for test set-up, test execution, post-test analysis, test termination and expected results

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1.0 Applicable Documents

1.1 Parent Documents

- (1) Component Acceptance Master Test Plan
(Deliverable 1002) INTERMETRICS, 06 October, 1995
- (2) EOSDIS Test Version Component Acceptance Test Plan, Baseline
(Deliverable 1003) INTERMETRICS, 03 November, 1995

1.2 Operational Documents

- (1) Interim Release One (Ir1) Maintenance and Operations Procedures
(609-CD-001- 0010) HITC, December 1995

1.3 Deviations from Plan

During the generation of this document there were several instances where the authors felt that the information in the EOSDIS Test Version Component Acceptance Test Plan for ECS IR-1 (November 3, 1995) needed to be changed. These changes were the result of more information becoming available either through additional documentation from the ECS team or from information obtained from test witnessing of the IR-1 system. Requirement mappings were updated when the context of the tests changed. The following table denotes these changes.

Comp. AT Plan	Comp. AT Procedures	Change
CFT01.3	CFT01.3	The scope of this test was modified to reflect the implementation of the configuration management tool.
CFT02		This test was removed with functionality going to CFT01, INT01 and the new SFT05
EXT01.3 EXT02.4		These tests are accounted for in EXT03.2.
EXT01.2 EXT02.3 EXT03.2		These tests were removed due to no automatic validation of the ingest function being performed in IR1.
	EXT01.2 EXT02.3	These test cases were added to handle ingest error conditions.
	INT01.3 INT01.4	These tests were added to inspect and analysis protocol and policy and procedures.
INT02		This test was removed with functionality transferred to SFT02.
SFT02.4	INT01.4	This test was moved to INT01.4.
SFT03.3	INT01.3	This test was moved to INT01.3.
SFT05		This test was merged with SFT02.

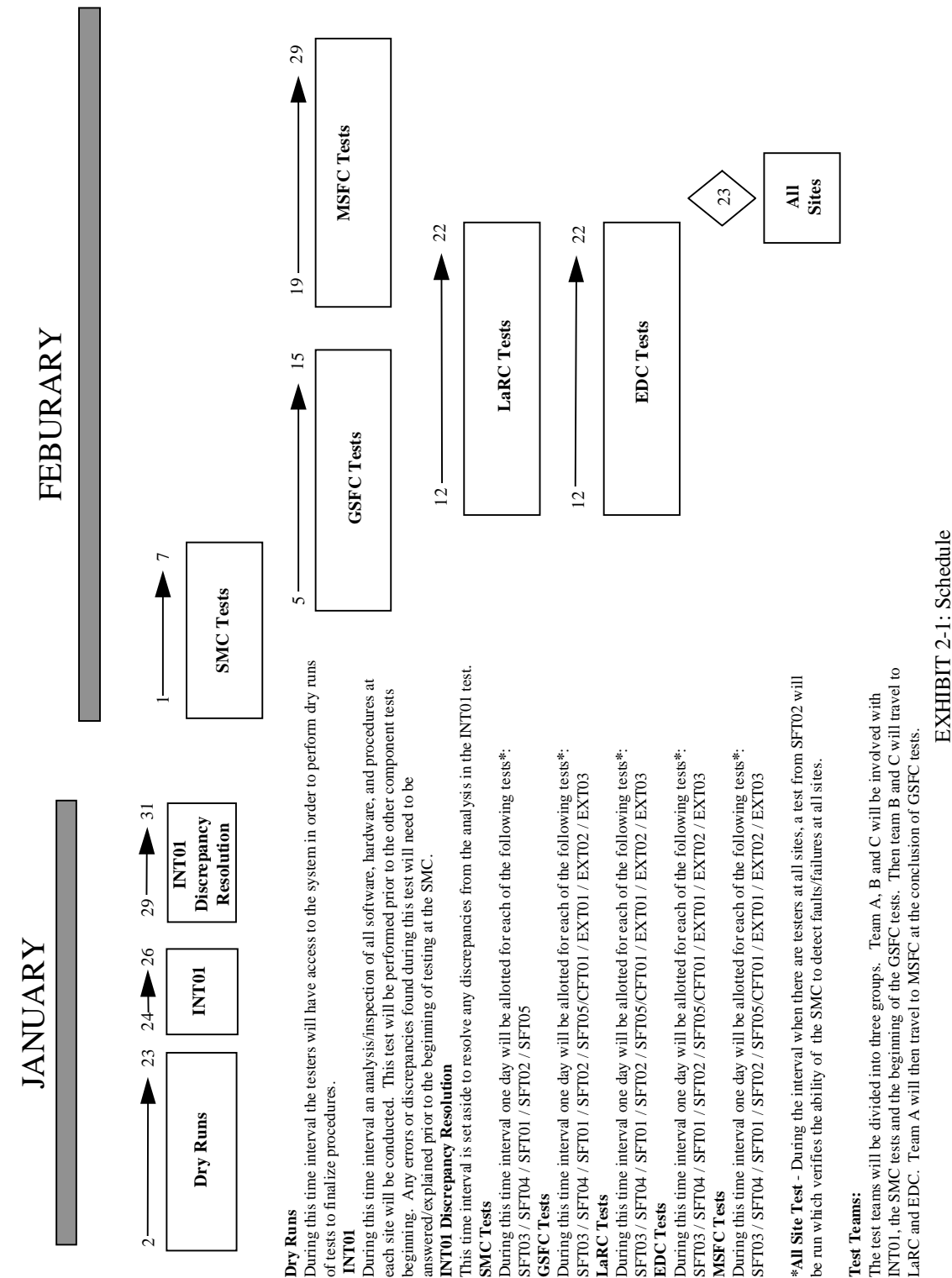
Component Acceptance Test Procedures for ECS Ir1

Comp. AT Plan	Comp. AT Procedures	Change
SFT06	SFT05	Since SFT05 was removed, SFT06 was renamed to SFT05.

EXHIBIT 1-1: Updates

2.0 Component AT Schedule

The following exhibit depicts the schedule presented in the Component Acceptance Test Plan for ECS Ir1 in a pictorial format. This information is presented again with the procedures so that each facility may examine the schedule of acceptance testing at their location. Details of this schedule will continue to be coordinated within the ESDIS organization and with the DAACs involved in Ir1 testing.



4.0 TEST PROCEDURES

Each test procedure is organized as follows:

- Test Objectives - this section defines the functionality being verified in the test thread. Each test case within the test verifies one or more of the objectives stated in this section.
 - Test Configuration - this section defines the hardware, software, and test tools necessary to execute the test cases within the thread.
 - Test Data Description - this section defines the data necessary to run the test. The data will be gathered and marked according to the test cases prior to test execution.
 - Requirements Verified - this section lists all the Level 3 requirements, by criticality rating, being verified in the test thread. Each test case will verify one or more of the listed requirements.
 - Procedures - this section contains the actual steps for performing the test in the following categories:
1. Test Set-up - this section contains the pre-test information necessary to run the test cases within the thread. This information includes account names, data path names, list of delivered components, expected results, etc. All of the steps in this section must be obtained prior to test execution.
 2. Test Execution - this section contains the high level steps necessary to run each test case including expected results. More information will be included in the test execution steps as operation manuals become available.
 3. Post Test Analysis - this section contains any off-line analysis which must be performed before the requirements are verified. Information such as report verification, history log analysis, expected results, etc. are listed in this section.
 4. Test Termination - this section contains steps necessary to perform at the completion of the test thread prior to exiting the testing environment.

The following major areas remain to be addressed across all of ECS Ir1 to support test procedures. These areas will be updated in each procedure as later document versions are developed.

- Test tool definition and operational procedures (especially simulators)
 - Sources of test data to include :
1. Data for ingest into the system
 2. Science software delivery packages to use in the validation of the science software integration process to include algorithms, calibration coefficients, expected results and associated documentation
 3. Data sets for use in file transfers between DAACs
 4. Data to be used for error and exception handling
 5. Data search parameters
 - System performance parameters such as:
 6. Time out periods

7. System threshold values
 - Data search criteria
 - Information regarding the simulation of system faults

4.1 CFT01 - Science Software Integration and Operations

Test Objectives:

This test verifies the capability of ECS at the DAACs to receive, integrate, and execute science software. It also verifies monitoring and configuration management of the science software.

Specific objectives to be tested are:

- Receipt of algorithm and calibration coefficients from SCF.
- Algorithm validation.
- Algorithm execution, monitoring, and result reporting.
- Algorithm configuration management.
- Algorithm update.

Test Configuration:

- Hardware: AI&T Server and Workstation.
- Software: AITTL.
- Test Tools: None.

Test Data:

Test Data	File Name / Location
Science S/W Delivery Package (FORTRAN 77, without errors)	
Science S/W Delivery Package ("C", without errors)	
Science S/W Delivery Package (Ada, without errors)	
Science S/W Delivery Package (FORTRAN 77, with errors)	
Calibration Coefficient file (without errors)	
Calibration Coefficient file (with compile errors)	

Requirements Verified:

Mission Essential:

DADS0190	DADS2450	EOSD0500	EOSD0730	EOSD1703	EOSD1750
ESN-0006	PGS-0270	PGS-0360	PGS-0370	PGS-0400	PGS-0602
PGS-0610	PGS-0620	PGS-0640	PGS-0650	PGS-0860	PGS-0900
PGS-0910	PGS-0920	PGS-0925	PGS-0940	PGS-0950	PGS-0970
PGS-0980	PGS-0990	PGS-1000	PGS-1010	PGS-1220	PGS-1315
SDPS0010	SDPS0090				

Mission Fulfillment:
EOSD1760 EOSD5020

Procedures:

Test Set-up:

Step	Action	Expected Results	Comments
1.	Acquire two valid account names and passwords for the ECS.	Account / Password combinations received.	
2.	Verify that a VOB and a view have been created for use by ClearCase.	View name: _____ VOB path: _____	
3.	Logon to the ECS at the DAAC using a valid account and password.	System allows access.	
4.	At the DAAC enter: <script CFT01_DAAC.log>. Initiates UNIX script file to record test history.		
5.	Log onto the ECS at the SCF using a valid account and password.	System allows access.	
6.	At the SCF enter: <script CFT01_SCF.log>. Initiates UNIX script file to record test history.		

Test Execution:

CFT01.1 Receipt of Science Software Delivery Package and/or Calibration Coefficients
This test case verifies receipt of science software delivery package and calibration coefficients.

Step	Action	Expected Results	Comments
1.	SCF coordinates with the DAAC. The SCF shall send the Science Software delivery package to the DAAC at the agreed upon anonymous drop off point.		The SCF is pushing the file.

Component Acceptance Test Procedures for ECS Ir1

Step	Action	Expected Results	Comments
2.	SCF transfer the Science Software delivery package to DAAC through manual file transfer (ftp).	File transferred successfully.	
3.	Delete the Science software delivery package at the DAAC.	File deleted.	
4.	Coordinate with the SCF via phone. The DAAC shall retrieve the Science Software delivery package from the SCF at the agreed upon anonymous drop off point.		
5.	DAAC retrieve Science Software delivery package from SCF through manual file transfer (ftp).	Files transferred successfully.	
6.	Extract Science Software delivery package tarfile using the following command “uncompress -c <tarfile>“.	Files extracted.	
7.	Coordinate with the SCF via phone. The SCF shall send the calibration coefficient update package to the DAAC.		
8.	SCF transfer calibration coefficient update package to DAAC through manual file transfer (ftp).	Files transferred successfully.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	At step 2; Perform a file compare of the Science Software delivery package in the DAAC directory with the original file selected for transfer at the SCF. The files should be identical.	Both files are identical.	
2.	At step 2; Verify that the DAAC's Science Software delivery package contains the following: a._Algorithm identification b._Algorithm source code c._List of required inputs d._Processing dependencies e._Test data and procedures f._Algorithm documentation	All required information incorporated.	
3.	At step 5; Verify that the DAAC's Science Software delivery package file date, time, and size are the same as the original SCF file.	Both files are identical.	
4.	At step 8;. Verify that the DAAC's calibration coefficient file date, time, and size are the same as the original SCF file	Both files are identical.	

Step	Action	Expected Results	Comments
5.	At step 8;. Verify that the DAAC's calibration coefficient file contains the following information: a._Identification of coefficient data set b._Calibration coefficients values c._Author and version number d._Identification of related processing algorithm e._Start and stop date/time of applicability f._Date and time g._SCF identification h._Reasons for update	All required information incorporated.	

CFT01.2 SCF Algorithm and Calibration Coefficient Validation

This test case verifies algorithm and calibration coefficient validation . This test case is run at each DAAC on each platform (HP, SUN, SGI), utilizing the appropriate Science Software Delivery Package.

Step	Action	Expected Results	Comments
1.	Compile a valid FORTRAN 77 algorithm from a valid Science Software Delivery Package	Successful compile.	
2.	Verify date & time of compiled file.	Current date & time.	
3.	Attempt to compile a FORTRAN 77 algorithm with the calibration coefficient file containing compile errors.	Error detected and displayed; events logged.	
4.	At the SCF, receive notification of problems with Calibration Coefficient Package.	Notification received.	
5.	Compile a valid "C" algorithm from a valid Science Software Delivery Package	Successful compile.	

Step	Action	Expected Results	Comments
6.	Verify date & time of compiled file.	Current date & time.	
7.	Compile a valid Ada algorithm from a valid Science Software Delivery Package (LaRC only)	Successful compile.	
8.	Verify date & time of compiled file.	Current date & time.	

Post Test Analysis:

No post test analysis is necessary for this test.

CFT01.3 Algorithm and Calibration Coefficient Configuration Management

This test case verifies Algorithm and Calibration Coefficient Configuration Management.

Step	Action	Expected Results	Comments
1.	At the AIT workstation at the DAAC, open the ClearCase working view.	The working view is started.	
2.	Change the current directory to the VOB where the algorithm and calibration coefficient files are to be placed.	Directory changed.	
3.	Check in a copy of a valid algorithm, and valid calibration coefficient file.	Files checked in.	
4.	Check out the algorithm under configuration control.	Files checked out.	
5.	Edit the algorithm. (Make any type of change.)	File changed.	
6.	Save the changes.	File saved.	
7.	Check in the edited algorithm.	File checked in.	

Component Acceptance Test Procedures for ECS Ir1

Step	Action	Expected Results	Comments
8.	Verify that the date and time of the newly checked in algorithm reflects the time of the editing.	Date and time are recent.	
9.	Attempt to edit and save the calibration coefficient file without “checking it out”.	Will not allow access to file or will not overwrite original file.	
10.	Exit ClearCase view.		

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	At step 3; Verify that the following information is available for the algorithm under CM control: 1) Source code including version number and author 2) Benchmark test procedures 3) Date and time of operational installation 4) Compiler identification and version 5) Final algorithm documentation		
2.	At step 3; Verify that the following information is available for the calibration coefficient file under CM control: 1) Source code including version number and author 2) Benchmark test procedures 3) Date and time of operational installation 4) Compiler identification and version 5) Final algorithm documentation		

Step	Action	Expected Results	Comments
3.	At step 8; Verify that the following information, available for the calibration coefficient file under CM control, has been updated as appropriate: 1) Source code including version number and author 2) Benchmark test procedures 3) Date and time of operational installation 4) Compiler identification and version 5) Final algorithm documentation		

CFT01.4: Algorithm Execution and Monitoring

This test case verifies Algorithm Execution and Monitoring.

Step	Action	Expected Results	Comments
1.	Start Autosys “autosys &”.	Autosys GUI control panel displayed.	
2.	Activate the Autosys Job Activity Console “autocons &”.	Job Activity Panel displayed.	
3.	Enter the Job Definition menu.	Job Definition dialog appears.	
4.	Note: Steps 4 - 12 describe the process of submitting an algorithm for processing. Subsequent algorithm execution steps will refer to the process as simply “Submit <algorithm> for execution via Autosys, under job name <job name>.”		
5.	Enter “CFT014a” in the Job Name field.	Information entered.	
6.	Enable the “Command” button in the Job Type field.	Button highlighted.	
7.	In the “Execute on Machine” field, enter the name of the machine on which the command will be executed.	Information entered.	

Component Acceptance Test Procedures for ECS Ir1

Step	Action	Expected Results	Comments
8.	In the UNIX command field, enter the name of the algorithm to be executed.	Information entered.	
9.	Click on the “save” button in the Job Definition dialog box.	Button highlighted.	
10.	Click on the “Send Event” button on the Autosys control panel.	Button highlighted	
11.	Enter “startjob” in the Type of Event name field.	Information entered.	
12.	In the Job Name field, enter “CFT014a” as the job’s name.	Information entered.	
13.	Click on the “Execute” button.	Observe job execution status on the Job Activity Panel.	
14.	Submit algorithm #2 (with errors) for execution via Autosys, under job name CFT014b.	Observe job execution status on the Job Activity Panel. Errors detected and displayed.	
15.	Prepare a software problem report using MS WORD, regarding the errors found. Send to appropriate SCF.	Report sent.	
16.	At the SCF, receive software problem report notification of invalid algorithm.	Notification received and is readable.	
17.	Submit algorithm #3 (with calibration coefficient errors) for execution via Autosys, under job name CFT014c.	Observe job execution status on the Job Activity Panel.	
18.	Compare algorithm test results at the DAAC with the delivery package sample results.	Out of threshold differences identified.	
19.	Send test products to SCF for analysis.	Files successfully transferred.	
20.	Submit algorithm #1 and algorithm #3 for execution via Autosys, under job names CFT014d and CFT014e respectively.	Observe job execution status on the Job Activity Panel.	

Step	Action	Expected Results	Comments
21.	Highlight job CFT014e and place it "On Hold".	"On Hold" appears in the status field.	
22.	After job CFT014d completes successfully, verify that CFT014e does not execute.	CFT014e status remains on hold.	
23.	Highlight job CFT014e and place it "Off Hold".	CFT014e status changes to starting and eventually successful.	
24.	Submit algorithm #1 for execution via Autosys, under job name CFT014f.	Observe job execution status on the Job Activity Panel.	
25.	After CFT014f has started, highlight the job and "Kill Job".	Status changes to Killjob and alarm button turns red.	
26.	Reset, then cancel the alarm.	Alarm manager window is displayed.	
27.	Close Autosys windows.		

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	At step 18; Verify out of threshold differences identified.	Proper out of threshold differences listed.	
2.	At step 19; Verify test products sent to SCF contain: 1) Algorithm identification 2) Test time(s) 3) Processor identification 4) Test results.	All components included.	

Test Termination:

Step	Action	Expected Results	Comments
1.	Print both local and remote history logs (UNIX script files).		
2.	Log off both local and remote sessions.		

4.2 EXT01 - TRMM Level 0 Data Ingest from SDPF

Test Objectives:

This test verifies the capability of ECS at the DAACs to receive and ingest TRMM (CERES and LIS) Level 0 data from the SDPF. Nominal ingest and error and exception handling are verified.

This test is executed twice:

Run 1: SDPF simulator at EDF transmitting to MSFC DAAC

Run 2: SDPF simulator at EDF transmitting to LaRC DAAC

Test Configuration:

- Hardware: Ingest Server.
- Software: INGST, DCCI, INCI CSCIs.
- Test Tools: SDPF Simulation.

Test Data:

Test Data	File Name / Location
Level 0 Data (simulated file)	ext01_level_0.dat
Level 0 data (simulated files) to exercise multiple products in the queue.	ext01_level_0_1.dat ext01_level_0_2.dat ext01_level_0_3.dat
LIS Algorithm utilizing L0 Data	

Requirements Verified:

Mission Essential:

DADS0130	DADS0145	DADS0250	DADS1070	DADS1380	DADS1400
EOSD0500	EOSD0730	EOSD1607	EOSD1608	ESN-0070	SDPS0020
SDPS0080	SDPS0110				

Mission Fulfillment:

EOSD5020

Procedures:

Test Set-up:

Step	Action	Expected Results	Comments
1.	Log in as DAAC operator		
2.	Open a UNIX script file to maintain test history		
3.	Check in with SDPF simulator at EDF, verify ready to support test.		

Test Execution:

EXT01.1 Transfer of TRMM L0 Data from GSFC SDPF

Step	Action	Expected Results	Comments
1.	DAAC receives a valid Authentication Request form SDPF.	DAAC responds with authentication response message; socket connection made.	
2.	DAAC receives a valid DAN from SDPF. product name: ext01_level_0.dat DAN specifies the number of files, file sizes, file names and directory paths for the available files.	DAN is accepted by ECS, DAA sent in response.	
3.	DAAC initiates a kftp m(get) to receive the data.		
4.	DAAC sends a DDN to the SDPF.	SDPF sends DDA in response.	DDN will notify ECS if all files were transferred successfully, and will identify errors associated with a particular file.
5.	SDPF deletes files from server that have been successfully pulled by ECS.		

Step	Action	Expected Results	Comments
6.	SDPF generates and places in the queue three DANs in quick succession for product names: ext01_level_0_1.dat ext01_level_0_2.dat ext01_level_0_3.dat	DAAC responds with DAAs for each DAN	[Intent is to verify ability to handle multiple entries in the SDPF output / ECS ingest queue.]
7.	ECS does a kftp m(get) to receive the data.		
8.	DAAC sends a DDN to the SDPF for each of the three products.	SDPF returns DDA for each DDN..	DDN will notify ECS if all files were transferred successfully, and will identify errors associated with a particular file.
9.	SDPF deletes files from server that have been successfully pushed to DAAC.		
10.	SDPF generates and transfers a valid DAN for a long file to DAAC.	DAAC responds with a valid DAA.	
11.	Before file transfer is complete, break the socket connection between the SDPF and ECS.	After (TBD - time-out period) transfer error logged at ECS. Message returned to SDPF.	
12.	SDPF authenticates to ECS to re-establish the connection broken in step 11.	ECS responds with an authentication response message.	

Post Test Analysis:

No post test analysis is necessary for this test.

EXT01.2 Error and Exception Handling

Step	Action	Expected Results	Comments
1.	ECS transmits the following authentication requests to the SDPF, in sequence, waiting for the response from the SDPF before transmitting the next request. Verify that an error message is displayed to the operator and/or event log as indicated. 1) (request filename - TBD)	 “Invalid message type” type = 50d	 Note: This also verifies that the router rejects DANs with invalid message types.
2.	ECS transmits a valid authentication message to the SDPF	Socket connection to ECS established.	
3.	SDPF transmits the following invalid DANs to the GSFC DAAC. (1) (filename - TBD)	A short DAA is received from ECS with the following errors: Invalid DAN sequence number (SEQ_NO = -3)	

Post Test Analysis:

No post test analysis is necessary for this test.

Test Termination:

Step	Action	Expected Results	Comments
1.	Print the test history file (UNIX script file)		
2.	Print the MSS Event Log		

Step	Action	Expected Results	Comments
3.	Take down the SDPF simulator at the EDF.		

4.3 EXT02 - ECS - TSDIS Interface Test

Test Objectives:

This test verifies the capability to

- Transfer data from TSDIS to ECS at the GSFC DACC via the DAN/DAA protocol.
- Transfer of data (data retrieval) from ECS to TSDIS via the Data Request/DRA and DAN/DAA protocol.

Nominal transfers and error and exception handling are verified.

Test Configuration:

- Hardware: Ingest Server.
- Software: INGST, DCCI, INCI CSCIs.
- Test Tools: TSDIS simulators.

Test Data:

Test Data	File Name / Location
Dummy TRMM product data file for transmission from TSDIS to ECS.	ext02_level_0.dat
Dummy TRMM ancillary data file for transmission from TSDIS to ECS.	ext02_anc.dat
Dummy TRMM product data file for transmission from ECS to TSDIS	ext02_reproc.dat

Requirements Verified:

Mission Essential:

DADS0145 DADS0170 DADS0250 DADS1070 DADS1380 DADS1400
 EOSD0500 EOSD0730 EOSD1607 EOSD1608 SDPS0020 SDPS0080

Mission Fulfillment:

EOSD5020

Procedures:

Test Set-up:

Step	Action	Expected Results	Comments
1.	Log in as DAAC operator		
2.	Open a UNIX script file to maintain test history		
3.	Start up TSDIS simulation and verify ready to support test.		

Test Execution:

EXT02.1 Transfer of TRMM Data Products from TSDIS

Step	Action	Expected Results	Comments
1.	TSDIS generates and transfers to the GSFC DAAC a DAN for TRMM product: ext02_level_0.dat The DAN specifies the number of files, file sizes, file names and directory paths for the available files.	DAN is validated by ECS and DAA returned.	
2.	ECS does a kftp m(get) to receive the data.	Files are retrieved from the TSDIS server.	
3.	Each file transferred is checked against the information in the DAN.		
4.	ECS sends a DDN to the	ECS receives a DDA from	DDN will notify ECS if

Step	Action	Expected Results	Comments
	TSDIS.	TSDIS.	all files were transferred successfully, and will identify errors associated with a particular file.
5.	TSDIS deletes files from server that have been successfully pulled by ECS.		
6.	TSDIS generates and transfers a DAN to ECS for an ancillary data (TRMM ephemeris) product. (Product name - ext02_anc.dat)	ECS responds with DAA and initiates a kftp file transfer	
7.	Upon completion of ingest, ECS transmits DDN to TSDIS.	TSDIS responds with DDA message.	

Post Test Analysis:

No post test analysis is necessary for this test.

EXT02.2 Nominal TRMM Data Transfer to TSDIS

Step	Action	Expected Results	Comments
1.	ECS receives a valid Authentication Request from TSDIS.	ECS issues authentication response, socket connection made.	
2.	ECS receives a Data request for TRMM standard data products from TSDIS (product = ext02_reproc.dat)		
3.	ECS checks the archive for availability of requested products.		
4.	ECS sends a DRA message to TSDIS.		
5.	ECS retrieves all of the		

Step	Action	Expected Results	Comments
	requested data from the archive and places it on the file server.		
6.	ECS sends a DAN to TSDIS specifying the number of files, file sizes, file names and directory paths for the available files.	DAN is accepted by TSDIS. TSDIS responds with DAA.	
7.	TSDIS Does a kftp m(get) to retrieve the data.		
8.	ECS receives a DDN from TSDIS	DDN contains a log of the file transfer results.	DDN will notify ECS if all files were transferred successfully, and will identify errors associated with a particular file.
9.	ECS sends a DDA to TSDIS		
10.	ECS deletes files from server that have been successfully retrieved.		

Post Test Analysis:

No post test analysis is necessary for this test.

EXT02.3 Error and Exception Handling

Step	Action	Expected Results	Comments
1.	ECS authenticates with a valid message to TSDIS.	TSDIS issues an authentication response message and establishes a socket connection.	
2.	TSDIS breaks the socket connection to ECS.		

Step	Action	Expected Results	Comments
3.	ECS attempts to authenticate to TSDIS with the following messages: (1) (filename - TBD)	TSDIS responds with the following errors in the authentication response message: Invalid message type (type = 99)	Note: This also verifies that the gateway will reject a DAN with an invalid message type.
4.	ECS authenticates to TSDIS with a valid authentication message.	TSDIS issues an authentication response message and establishes a socket connection.	
5.	TSDIS will transmit DANs to the ECS with errors as follows: (1) (filename - TBD)	ECS will return short DAAs with the following error notifications: Invalid DAN sequence number. (SEQ_NO = -3)	
6.	TSDIS transmits a nominal DAN to ECS	ECS responds with a DAA and initiates kftp transfer.	
7.	TSDIS re-transmits the same DAN from step 6 to ECS.	ECS responds with short DAA with a duplicate DAN error message.	
8.	TSDIS will transmit DANs to the ECS with errors as follows: (1) (filename - TBD)	ECS will return long DAAs with the following error notifications: Expiration time / format (Non ISO: yyy-mm-ddThh:mm:ssZ) T&Z are literals	
9.	Disable the ingest process at the ECS.		
10.	Transmit a nominal DAN	No DAA is received -	

Step	Action	Expected Results	Comments
	from TSDIS to ECS.	TSDIS DAN protocol process times out after (TBD).	

Post Test Analysis:

No post test analysis is necessary for this test.

Test Termination:

Step	Action	Expected Results	Comments
1.	Print the test history log from the script file. Print the MSS Event Log.		
2.	Take down the TSDIS simulator.		

4.4 EXT03 - NOAA and Non-EOS Ancillary Data Ingest

Test Objectives:

This test verifies the capability of ECS at the DAACs to receive and ingest Non-EOS and NOAA ancillary data sets from both NESDIS and DAO. Specific objectives to be tested are:

- Polling and retrieval of ancillary data.
- Validation and ingest of ancillary data products into the ECS data servers.
- Availability of ingested ancillary data for algorithms execution and other uses.

Test Configuration:

- Hardware: Ingest Server.
- Software: INGST, DCCI, INCI CSCIs.
- Test Tools: DAO and NESDIS simulation

Component Acceptance Test Procedures for ECS Ir1

Test Data:

Test Data	File Name / Location
NMC Ancillary Data FNL	
NESDIS Ancillary Data GPCP GPCC AVHRR-Aerosol AVHRR-Vegetation Index SSM/I-Snow/Ice Cover	

Requirements Verified:

Mission Essential:

DADS0250 DADS0260 EOSD0500 ESN-0290 SDPS0020 SDPS0080

Mission Fulfillment:

EOSD1710

Procedures:

Test Set-up:

Step	Action	Expected Results	Comments
1.	Log in as operator		
2.	Open a UNIX script file to maintain test history		

Test Execution:

EXT03.1 Polling and Transfer of NOAA and Non-EOS Ancillary Data

This test case addresses nominal and faulty transmissions of NOAA/Non-EOS ancillary data to ECS. The standard sequence to be executed involves the following steps:

Step	Action	Expected Results	Comments
1.	Verify through UNIX that the directory polling process is active. If the process is not active, start it up.		
2.	Copy an ancillary data file into the transfer directory: filename: ____ From(dx) ____ To (dx) ____	The file presence should be detected and the transfer initiated within the predetermined polling interval.	
3.	Verify completion of file transfer through UNIX directory listing with time stamps and file sizes List directory _____TBD _____	File parameters in DAAC directory match those from the NESDIS directory.	
4.	Copy a <u>large*</u> ancillary data file into the transfer directory: filename: _____TBD_____ From(dx) _____TBD_____ To (dx) _____TBD____	The file presence should be detected and the transfer initiated within the predetermined polling interval.	*The file should be large enough to provide several minutes of transmission.
6.	Prior to completion of file	ftp error reported.	

Component Acceptance Test Procedures for ECS Ir1

Step	Action	Expected Results	Comments
	transfer, break the network connection.		
7.	Restore the NESDIS - DAAC network connection.		
8.	Copy two ancillary data files and one NESDIS science file into the transfer directory: filename: _____TBD_____ ____TBD_____ ____TBD_____ From(dx) _____TBD_____ To (dx) _____TBD____	The file presence should be detected and the transfer initiated within the predetermined polling interval.	
9.	Verify completion of file transfer through UNIX directory listing with time stamps and file sizes List directory _____TBD_____	File parameters in DAAC directory match those from the NESDIS directory.	

Post Test Analysis:

No post test analysis is necessary for this test.

EXT03.2 NOAA Ancillary Data Availability for ECS Operations

This test case demonstrates the availability of the ingested NOAA ancillary data to ECS users. During Ir1 testing, data sets will reside in temporary storage.

Step	Action	Expected Results	Comments
1.	Log into the V0 system locally.		
2.	Perform a V0 search using the following criteria: (TBD)	The data sets located should include: (list - TBD)	
3.	Transfer the data set identified in step 2 to the staging area of PDPS.		
4.	Log into the V0 system		
5.	Perform a V0 search using the following criteria: (TBD)	The data sets located should include: (list - TBD)	
6.	Transfer data set from the remote DAAC to the local DAAC.	The selected data sets are transferred.	
7.	Verify completion of file transfer through UNIX directory listing with time stamps and file sizes.	File parameters in DAAC directory match those from the remote DAAC directory.	

Post Test Analysis:

No post test analysis is necessary for this test.

Test Termination:

Step	Action	Expected Results	Comments
1.	Log off the ECS.	Return to UNIX prompt.	
2.	Print history logs.		

4.5 INT01 - System Deployment Verification

Test Objectives:

The CAT INT01 is an inspection/analysis process to insure that ECS has been properly deployed at each DAAC and the SMC per Release Plan Specification and Version Description Document. This test will be performed at the end of January 1996 before the execution of the other tests begins. Specific test objectives are:

Verifying system protocols, policies and procedures, hardware, and software are under configuration management control and correspond to Ir1 Release specifications through the analysis of documentation.

Test Configuration:

Hardware: Site configuration.

Software: ClearCase, CM tool.

Test Tools: None.

Test Data:

None.

Requirements Verified:

Mission Essential:

EOSD0502	EOSD3200	ESN-1140	ESN-1340	ESN-1350	PGS-0490
PGS-1015	PGS-1020	PGS-1025	PGS-1030	SMC-2505	SMC-2510
SMC-2515	SMC-4305				

Mission Fulfillment:

None.

Procedures:

Test Set-up:

Step	Action	Expected Results	Comments
1.	Acquire a list from CM of all software delivered with the release.	A printing of a worksheet with S/W information.	Verify date of print out to be current.
2.	Acquire a list from CM of all hardware delivered with the release.	A printing of a worksheet with H/W information.	Verify date of print out to be current.
3.	Acquire a list of all policy and procedures associated with Ir1 from the EDF. The list should include dates of publication.	A printing of a worksheet with policy and procedure information.	Verify date of print out to be current.
4.	Acquire the Ir1 Installation Plan for the ECS Project (August 1995, 800-TP-001-001).	A list of the software and hardware configurations, and a bill of materials.	Use the most recent version available.
5.	Acquire the Release-B CSMS Release and Development Plan (October 1995, 307-CD-005-001 / 329-CD-005-001), which contains Ir1 information, and the SDPS Release and Development Plan for the ECS Project (March 1995, 307-CD-002-002, 329-CD-002-002)	A list of the Configuration Items (CIs) and S/W components of the Communications and System Management Subsystem (CSMS) of the ECS. A list of the Configuration Items (CIs) and S/W components of the Science Data Processing Segment (SDPS) of the ECS.	Use the most recent versions available.
6.	Acquire a list of all IRDs and ICDs associated with the Ir1 release.		
7.	Acquire a list of all policies and procedures associated with the Ir1 release.	Documentation describing the policies and procedures for each DAAC.	

Test Execution:

INT01.1 Site Hardware Configuration Verification

This test case demonstrates the verification of system hardware installed at the site. The configuration management tool is used to verify that the hardware is under control and corresponds to the release specification and/or version description document through analysis of those documents.

Step	Action	Expected Results	Comments
	There are no test execution steps for this test case. The test is performed entirely by inspection/analysis and is covered in the post-test analysis section below.		

Post Test Analysis:

Step	Action	Expected Results	Comment
Note:	Compare the information gathered in steps 2 and step 4 of the test set-up to insure the following:		
1.	1) That there is compatibility between the database worksheet and to the release specification and/or version description document	All Ir1 specified hardware is under CM.	

INT01.2 Site Software Configuration Verification

This test case demonstrates the verification of system software, software tools, databases, and libraries installed at the site. The configuration management tool is used to verify that the software is under control and corresponds to the release specification and/or version description document through analysis of those documents.

Step	Action	Expected Results	Comments
	There are no test execution steps for this test case. The test is performed entirely by inspection and is covered in the post test analysis section below.		

Post Test Analysis:

Step	Action	Expected Results	Comment
Note:	Compare the information gathered in steps 1 and steps 4 & 5 of the test set-up to insure the following:		
1.	1) That there is compatibility between the database worksheet and to the release specification and/or version description document	All Ir1 specified software is under CM.	

INT01.3 Protocol Verification

This test case verifies the protocols to be used by the ECS.

Step	Action	Expected Results	Comments
	There are no test execution steps for this test case. The test is performed entirely by inspection and is covered in the post test analysis section below.		

Post Test Analysis:

Step	Action	Expected Results	Comment
Note:	Compare the information gathered in steps 2 and in steps 4 & 6 of the test set-up to insure the following:		
1.	1) That there is compatibility between the physical devices and the corresponding medium access control (MAC) with ISO and ANSI standards.	The physical devices and the corresponding MAC are compatible with ISO and ANSI standards.	

Step	Action	Expected Results	Comment
2.	2) That TCP/IP communications protocols and services as required by external elements are supported.	That TCP/IP protocols and services are supported by each external element.	

INT01.4 Policy and Procedure Management

This test case verifies the availability and management of system policies and procedures at the DAACs.

Step	Action	Expected Results	Comments
	There are no test execution steps for this test case. The test is performed entirely by inspection and is covered in the post test analysis section below.		

Post Test Analysis:

Step	Action	Expected Results	Comment
Note:	Compare the information gathered in step 3 and 6 of the test set-up to insure the following:		
1.	1) That there is compatibility between the database worksheet and to the release specification and/or version description document	All Ir1 specified policies and procedures are maintained.	

Test Termination:

Step	Action	Expected Results	Comments
1.	Log off ECS system.	Return to UNIX prompt.	
2.	At UNIX prompt, print out history logs.		

4.6 SFT01 - Network Operations and Monitoring

Test Objectives:

This test verifies the network operations and administration at the SMC. Specific objectives of this test are:

- Access interfaces to display network configuration and status both locally and at the DAACs, through V0 WAN connectivity.
- Monitor and manage network performance through the use of thresholds and statistics.
- Evaluate network fault isolation and response mechanisms.

Test Configuration:

- Hardware: MSS Server, V0 LAN at each site, V0 WAN.
- Software: MCI, INCI CSCIs.
- Test Tools: None.

Test Data:

None.

Requirements Verified:

Mission Essential:

ESN-0010	ESN-0070	ESN-0210	ESN-0620	ESN-0640	ESN-0650
ESN-0740	ESN-0760	ESN-0775	ESN-0790	ESN-0800	ESN-0830
ESN-0840	ESN-0900	ESN-1060	ESN-1070	PGS-0430	

Mission Fulfillment:

None.

Procedures:

Test Set-up:

Step	Action	Expected Results	Comments
1.	Select a network threshold value to modify which can easily be exceeded to result in an out of limit event occurring.	Record network threshold name and recommended value: _____	
2.	Start a UNIX script file to record test activities.	Script file is started, record filename here: _____	

Test Execution:

SFT01.1 Network Configuration and Status Monitoring

This test case verifies the capability to view the network configuration and to assess the status of each of the components.

Step	Action	Expected Results	Comments
1.	Log on to the SMC workstation and start the network monitoring tool.	Access granted and network monitoring tool is displayed on the screen.	
2.	Generate a report summarizing the status of the network devices in the present configuration. Select the output of the report to the console, a disk file, and a printer.	Report generated and all three outputs contain the same information.	
3.	Select to view the network routers. Compare the information in the report with the display.	Display showing the status of the network routers appears on the screen. Information on the report verified.	
4.	Select to view the network links. Compare the information in the report with the display.	Display showing the status of the network links appears on the screen. Information on the report verified.	
5.	Select to view the network	Display showing the	

Step	Action	Expected Results	Comments
	gateways. Compare the information in the report with the display.	status of the network gateways appears on the screen. Information on the report verified.	
6.	Select to view statistics detailing network configuration and status. Compare the information in the report with the display.	Display showing network configuration and status statistics appears on the screen. Information on the report verified.	

Post Test Analysis:

No post test analysis is necessary for this test.

SFT01.2 Network Performance Monitoring

This test case verifies the monitoring of network performance through the use of network thresholds.

Step	Action	Expected Results	Comments
1.	Logon to the SMC station.	Access granted.	
2.	Display the currently available network thresholds for one of the DAACs.	Display shows network threshold settings (On/Off and Pass/Fail indicators)	
3.	Generate a network threshold report for the DAAC.	Report generated showing the same thresholds as on the display.	
4.	Update the network threshold selected in the test set up.	Display shows the updated threshold.	
5.	Perform the necessary functions required to exceed the new network threshold value.	The display should indicate when the threshold is exceeded.	
6.	After the threshold is exceeded, return the threshold to its original value.	Display shows the original value.	
7.	Generate a report showing the network's performance.	Threshold value exceeded should	

Step	Action	Expected Results	Comments
		appear on the report.	
9.	Generate a short and long term trend analysis report.	The report should contain the following information: a. Operational status b. Performance of all resources. c. Maintenance activities.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	Verify that the history log captured the events during the test.	All events should be recorded in sequence.	

SFT01.3 Network Fault Isolation and Recovery

This test case demonstrates the capability to detect faults within the network.

Step	Action	Expected Results	Comments
1.	Log on to the SMC workstation and display the network monitoring tool.	Access granted and tool is displayed.	
2.	Simulate a network threshold out of limit condition.	Event detected, logged, alarm generated and recommended recovery procedure displayed.	
3.	Follow the recommended recovery procedure to correct the problem, or asses if the steps would correct the problem if the problem was not simulated..	Recommended steps correct the problem.	
4.	Simulate a route device unavailability.	Event detected, logged, alarm generated and recommended recovery procedure displayed.	
5.	Follow the recommended recovery procedure to	Problem corrected or recommended solution is	

Step	Action	Expected Results	Comments
	correct the problem, or asses if the steps would correct the problem if the problem was not simulated..	a logical solution to a real occurrence of the problem.	
6.	Simulate an unavailable gateway.	Event detected, logged, alarm generated and recommended recovery procedure displayed.	
7.	Follow the recommended recovery procedure to correct the problem, or asses if the steps would correct the problem if the problem was not simulated..	Problem corrected or recommended solution is a logical solution to a real occurrence of the problem.	
8.	Simulate a DAAC unavailability.	Event detected, logged, alarm generated and recommended recovery procedure displayed.	
9.	Follow the recommended recovery procedure to correct the problem, or asses if the steps would correct the problem if the problem was not simulated..	Problem corrected or recommended solution is a logical solution to a real occurrence of the problem.	
10.	Simulate a protocol error.	Event detected, logged, alarm generated and recommended recovery procedure displayed.	

Step	Action	Expected Results	Comments
11.	Follow the recommended recovery procedure to correct the problem, or asses if the steps would correct the problem if the problem was not simulated..	Problem corrected or recommended solution is a logical solution to a real occurrence of the problem.	
12.	Generate a network fault report.	The report is generated and all detected events simulated in this test are listed on the report.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	Compare the history logs with the report generated in step 12.	The report and the history log should contain all events generated during the test.	

Test Termination:

Step	Action	Expected Results	Comments
1.	Log off the both local and remote ECS sessions.	Return to UNIX prompt.	
2.	At the UNIX prompt, enter the command to print the history logs.	History logs are printed.	

4.7 SFT02- System Operations and Administration

Test Objectives:

This test addresses the operation and administration of system hardware and software, including performance monitoring. Specific objectives of this test are:

- Monitor the status of non-communication related hardware and software.
- Monitor system performance through the management of performance thresholds.
- Evaluate system fault isolation and response mechanisms.
- Evaluate configuration management of procedures and policies.

Test Configuration:

- Hardware: MSS Server.
- Software: MCI, INCI, DCCI CSCIs.
- Test Tools: None.

Test Data:

None.

Requirements Verified:

Mission Essential:

EOSD0510	ESN-0650	ESN-0910	PGS0370	SMC-3300	SMC-3305
SMC-3370	SMC-3375	SMC-3380	SMC-3390	SMC-3395	SMC-3415
SMC-4310	SMC-4311	SMC-4315	SMC-4320	SMC-4325	SMC-8840

Mission Fulfillment:

EOSD0780

Procedures:

Test Set-up:

Step	Action	Expected Results	Comments
1.	Obtain a list of software programs that are being monitored by the HP OpenView tool.	List generated.	
2.	Obtain a list of system thresholds being monitored by HP OpenView.	List generated.	
3.	Start a UNIX script file to record test activities.	Script file is started, record filename here: _____	

Test Execution:

SFT02.1 System Hardware Status Monitoring

This test case verifies the system capability to monitor both local and remote hardware within the DCE cell. This test is performed only on hardware associated with the ECS.

Step	Action	Expected Results	Comments
1.	Logon to the SMC workstation as system administrator.	Access granted.	
2.	Display through HP OpenView the system hardware status.	A display showing the overall ECS hardware status is observed with an icon for each DAAC.	
3.	Double click on the DAAC icon under test.	A display showing the DAACs hardware status is observed.	
4.	Place a hardware unit off-line.	Status of the unit is changed.	
5.	Return the off-line unit back to on-line.	Status updates again.	
6.	Return to main system display.	Display showing all DAACs is observed.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	Verify that the history log captured the events during the test.	All events should be recorded in sequence.	

SFT02.2 System Software Status Monitoring

This test case verifies the monitoring of system software. The system provides the capability to view software currently operating within the systems and their current status. This test is performed on software provided with ECS.

Step	Action	Expected Results	Comments
1.	Logon to the SMC workstation as system administrator.	Access granted.	
2.	Display through HP	A display showing the	

Step	Action	Expected Results	Comments
	OpenView the software system status.	overall ECS software status is observed with an icon for each DAAC.	
3.	Double click on the icon for the DAAC under test.	A display showing the DAACs software status is observed.	
4.	Stop a process which is being monitored at the DAAC.	Status of the process is changed.	
5.	Restart the process.	Status updates again.	
6.	Return to main system display.	Display showing all DAACs is observed.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	Verify that the history log captured the events during the test.	All events should be recorded in sequence.	

SFT02.3 System Performance Management

This test verifies the monitoring of system performance through the use of system thresholds.

Step	Action	Expected Results	Comments
1.	Logon to the SMC workstation.	Access granted.	
2.	Display the currently available system thresholds.	Display shows system threshold settings.	
3.	Generate a system threshold report.	Report generated showing the same thresholds as on the display.	
4.	Update one of the existing threshold setting so that an event can be easily triggered by exceeding the threshold. Use values of On/Off, Pass/Fail, or various levels of degradation.	Display shows the updated threshold.	
5.	Perform the necessary functions required to exceed	The display should indicate when the	

Step	Action	Expected Results	Comments
	the new threshold value.	threshold is exceeded.	
6.	After the threshold is exceeded, return the threshold to its original value.	Display shows the original value.	
7.	Generate a report showing the systems performance.	Threshold value exceeded should appear on the report.	
8.	Generate a resource utilization report.	Report generated.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	Examine the history log.	All changes to system thresholds should appear in the history log. Also, all requests for reports and the events performed to exceed threshold values should be recorded.	
2.	Examine performance report.	Verify that the threshold values which were exceeded appear in the report. The report should include operational status.	
3.	Examine resource utilization report.	Verify that the affected resources are marked in the report. The report should include maintenance activities performed on the resources.	

SFT02.4 Fault Isolation and Response

This test case is used as the all site test and demonstrates the capability to detect faults within the system. It also determines if the correct responses are generated.

Step	Action	Expected Results	Comments
1.	Log onto the SMC workstation.	Access granted.	
2.	Perform the steps necessary to exceed one of the system thresholds at the GSFC DAAC.	Display updates to show the exceeded threshold and recommends what actions are necessary to correct the problem.	
3.	Disable a hardware device at the LaRC DAAC.	Display updates to show the hardware device is not available and recommends what actions are necessary to correct the problem.	
4.	Simulate a stalled print queue at the EDC DAAC.	The display updates to show the stalled print queue and recommends what actions are necessary to correct the problem.	
5.	Stop one of the executing software programs at the MSFC DAAC.	The display updates to show the program is no longer running and recommends what actions are necessary to correct the problem.	
6.	Perform fault diagnosis testing.	The test should report the errors induced in steps 2 - 5.	
7.	Return the hardware device used in step 4 to its original state.	Display updates to show the device is on-line.	
8.	Return the print queue to its active state.	Display updates to show that the print queue is normal.	
9.	Restart the stopped software application.	Display updates to show the program is available once again.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	Verify the history log.	The history log should contain all events performed in this test.	
2.	Verify the recommended actions to correct the problems detected.	The recommended solutions should be appropriate to the situation encountered.	

4.8 SFT03 - System Access & Connectivity

Test Objectives:

This test verifies the capability of ECS to access the Version 0 (V0) LAN and WAN and use its capabilities. Specific objectives to be tested are:

V0 LAN and WAN access.

Protocol verification.

File and electronic message transfer.

Test Configuration:

Hardware: V0 LAN at each site, V0 WAN access, MSS server, printer (local and remote).

Software: DCCI, INCI, MCI CSCIs.

Test Tools: None.

Test Data:

Printable ASCII file at local and remote site.

User accounts and passwords at local and remote sites.

Binary and data files to be used for file transmissions.

Requirements Verified:

Mission Essential:

EOSD0500	EOSD0730	ESN-0003	ESN-0010	ESN-0070	ESN-0280
ESN-0290	ESN-0370	ESN-1140	ESN-1170	ESN-1180	

Mission Fulfillment:

None.

Procedures:

Test Set-up:

Step	Action	Expected Results	Comments
1.	Acquire a valid account name and password for the ECS.	Account / Password combination received.	
2.	Acquire the name of an ASCII file to be printed on a local printer.	Record local file name/path: _____	
3.	Acquire the name of a file to be printed on the remote printer.	Record remote file name/path: _____	
4.	Acquire two binary files to be used for file transmission: a. Binary unstructured b. Binary sequential.	Record binary file names/path: Unstructured: _____ Sequential _____	
5.	Acquire two text files to be used for file transmission: a. Unstructured text b. Sequential text.	Record text file names/path: Unstructured: _____ Sequential _____	
6.	Acquire a data file to be used for file transmission.	Record data file name/path: _____	
7.	Start a UNIX script file to record test activities.	Script file is started, record filename here: _____	

Test Execution:

SFT03.1 LAN Access

This test case verifies access to the LAN.

Step	Action	Expected Results	Comments
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Step	Action	Expected Results	Comments
1.	Attempt to log on to the ECS using a valid account with an invalid password.	System does not allow access.	
2.	Attempt to log onto the ECS using a valid account and password.	System allows access.	
3.	Select the file recorded in the Test Set-up step 2 above.	The file is selected.	
4.	Select the print option to output the file to the local printer.	The file is printed at the local printer.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	Compare printed file against original file.	Files should be the same.	

SFT03.2 WAN Access

This test case verifies access to the WAN.

Step	Action	Expected Results	Comments
1.	Attempt to log onto a remote host using a valid account with an invalid password.	System does not allow access.	
2.	Attempt to log onto a remote host using a valid account and password.	System allows access.	
3.	Select the file recorded in the Test Set-up step 3 above.	The file is selected.	
4.	Select the print option to output the file to the remote printer.	The file is printed at the remote printer.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	Compare printed file against original file.	The files should be identical.	

SFT03.3 File Transfer

This test case verifies SMC to DAAC transfer of files, via ftp and rcp.

Step	Action	Expected Results	Comments
1.	Logon to the SMC workstation.	Access allowed.	
2.	Logon to a remote ECS host.	Access allowed.	
3.	Select each of the text files specified in step 5 of test set-up.	File is selected.	
4.	Select the ftp transfer option and the remote ECS host (from step 2) as the destination.	File transfer started.	
5.	At the remote host, observe the file transfer directory.	The file should appear once the transfer has completed.	
6.	Select each of the binary files specified in step 4 of test set-up.	File is selected.	
7.	Select the ftp transfer option and the remote ECS host (from step 2) as the destination.	File transfer started.	
8.	At the remote host, observe the file transfer directory.	The file should appear once the transfer has completed.	
9.	Select each of the data files specified in step 8 of test set-up.	File is selected.	
10.	Select the rcp transfer option and the remote ECS host (from step 2) as the destination.	File transfer started.	
11.	At the remote host, observe the file transfer	The file should appear once the transfer has	

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Step	Action	Expected Results	Comments
	directory.	completed.	
12.	At the local host, select the file transfer directory and delete any files.	The directory is now empty.	
13.	At the remote host select one of the ASCII files which was just transferred.	The file is selected.	
14.	Select the ftp transfer option and the local ECS host (from step 1) as the destination.	File transfer started.	
15.	At the local host, observe the file transfer directory.	The file should appear once the transfer has completed.	
16.	At the remote host select one of the ASCII files which was just transferred.	The file is selected.	
17.	Select the ftp transfer option and the local ECS host (from step 1) as the destination.	File transfer started.	
18.	At the local host, observe the file transfer directory.	The file should appear once the transfer has completed.	
19.	At the remote host select one of the binary files which was just transferred.	The file is selected.	
20.	Select the ftp transfer option and the local ECS host (from step 1) as the destination.	File transfer started.	
21.	At the local host, observe the file transfer directory.	The file should appear once the transfer has completed.	
22.	At the remote host select one of the data files which was just transferred using the rcp option.	The file is selected.	

Step	Action	Expected Results	Comments
23.	Select the rcp transfer option and the local ECS host (from step 1) as the destination.	File transfer started.	
24.	At the local host, observe the file transfer directory.	The file should appear once the transfer has completed.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	Verify that the file name, file size, and time stamp of the initial file and the transferred file are the same.	The file information should be identical.	

SFT03.4 Electronic Messages

This test case verifies DAAC to DAAC transfer of electronic messages.

Step	Action	Expected Results	Comments
1.	Prepare a mail message, with return receipt, at the local host with destination of remote host.	The system allows the generation of a mail message.	
2.	Send the message.	Message received at the remote host.	
3.	Prepare a network broadcast message and send it to all remote hosts.	Remote hosts receive the non-email broadcast message.	

Post Test Analysis:

No post test analysis is necessary for this test.

Test Termination:

Step	Action	Expected Results	Comments
1.	Log off the both local and remote ECS sessions.	Return to UNIX prompt.	
2.	At the UNIX prompt, enter the commands to print the history logs.		

4.9 SFT04 - System Security Administration

Test Objectives:

This test verifies the system capability to define various levels of users and authenticate the associated privileges. Specific objectives to be tested are:

- Manage users through the use of the security registry.
- Specify and implement user groups.
- Authenticate and enforce user privileges and access.

Test Configuration:

- Hardware: MSS Server.
- Software: DCCI, INCI CSCIs.
- Test Tools: none.

Test Data:

None.

Requirements Verified:

Mission Essential:

ESN-0010 ESN-0650 SMC-5320 SMC-5325 SMC-5330 SMC-5335
SMC-5365 SMC-8880

Mission Fulfillment:

None.

Procedures:

Test Set-up:

Step	Action	Expected Results	Comments
1.	Acquire account name/password with privileges to modify the user account registry.		
2.	Start a UNIX script file to record test activities.	Script file is started, record filename here: _____	

Test Execution:

SFT04.1 User Account Management

This test case addresses the management of user accounts through the security registry.

Step	Action	Expected Results	Comments
1.	Log on to the system and invoke the user registry. The account used must have privileges to modify the user registry. Print the user registry.	Access to system and the user registry granted. User registry printed.	
2.	Create four new test accounts with different privileges.	Accounts are created.	Each account should have different data access privileges.
3.	Log on to the system using the new accounts.	Access granted.	
4.	Log off one of the accounts.	Return to the UNIX prompt.	
5.	Delete the account from step 4.	Account deleted.	
6.	Log on to the system using the account just deleted.	Access denied.	
7.	Change information on one of the test accounts (include a password change).	Information changed.	

8.	Log on to the system using the modified account.	Access granted, modification noted.	
9.	Print the user registry again.	Registry should reflect changes made during this test.	

Post Test Analysis:

Step	Analysis Required	Expected Results	Comments
1.	Examine history log and ensure all steps from the test case were recorded.	All functions performed should be recorded.	
2.	Compare the user registry printed in step one with the one printed in step 9 .	Ensure all changes were recorded.	

SFT04.2 User Group Specification

This test case addresses the management of user groups within the system.

Step	Action	Expected Results	Comments
1.	Log on to the system and invoke the user registry. The account used must have privileges to modify the user registry.	Access to system and the user registry granted.	
2.	View the defined user groups within the system.	User groups are displayed with associated privileges and access control.	
3.	Create a new user group and select privileges.	User group added to the system user registry with selected privileges.	
4.	Add one of the three accounts created in SFT04.1 to this user group.	Display of group now shows the new group with the three new accounts.	
5.	Repeat steps 3 and 4 for the other two accounts created in SFT04.1 so that each account had different user privileges.	Each account is now in a separate user group.	
6.	Print user registry.	Each of the accounts	

Step	Action	Expected Results	Comments
		created in SFT04.1 should now belong to a separate user group with different privileges.	

Post Test Analysis:

Step	Analysis Required	Comments	Comments
1.	Compare the user registry generated in this test case with the one generated at the end of SFT04.1.	Each of the three accounts generated in SFT04.1 should now be in a different user group.	

SFT04.3 User Privilege Authentication

This test case ensures that the specified user privileges are implemented by the system.

Step	Action	Expected Results	Comments
1.	Log on to the system using one of the three accounts created in this thread.	Access to system.	
2.	Perform functions within the scope of the privileges assigned to the user account.	All functions are performed.	
3.	Attempt to perform functions outside of the privileges assigned to the user account.	Warning messages displayed. Updates made to the history log showing attempted operations. Operations are not performed.	
4.	Repeat test case with other two accounts generated in SFT04.1.	Operations performed with proper privileges. Other operations are not performed.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	Compare history log against operations performed in steps 2 and 3 for each account.	The history log should contain entries for each function performed or attempted.	

SFT04.4 Security Fault Detection and Response

This test case addresses the detection and response to unauthorized access to the system.

Step	Action	Expected Results	Comments
1.	Attempt to log into the local system using invalid account names.	Access denied, invalid attempts logged.	
2.	Attempt to log into a remote system using invalid account names.	Access denied, invalid attempts logged.	
3.	Repeat the attempted login process until the system is compromised and the system shuts out the user's attempt to log in.	Alarm generated at the SMC station to alert that the system security is being compromised. The alert should include the location of the attempt.	
4.	Print the security logs and associated reports.	Each invalid attempt is printed to the security logs and included in the security reports.	

Post Test Analysis:

Step	Action	Expected Results	Comments
1.	Examine the security logs and the security reports.	All login attempts from steps 1 and 2 should be contained in both the security logs and the security reports.	

Test Termination:

Step	Action	Expected Results	Comments
1.	Delete all accounts created for this test.	Accounts deleted.	
2.	Log off the ECS.	Return to UNIX prompt.	
3.	At the UNIX prompt print the history logs for all local and remote systems used.	History logs printed.	

4.10 SFT05 - ECS Standard Services

Test Objectives:

This test verifies the availability of system standard services on the various system workstations. Specific objectives to be tested are:

- Availability of SDP Toolkit at AI&T workstation.
- Availability of Standard Services at the user workstation.

Test Configuration:

- Hardware: AI&T Workstation, Ingest Workstation
- Software: SDPTK, DCCI CSCIs.
- Test Tools: None.

Test Data:

None.

Requirements Verified:

Mission Essential:

EOSD0502 ESN-0003 ESN-0010 ESN-1170 PGS-0602

Mission Fulfillment:

None.

Procedures:

Test Set-up:

Step	Action	Expected Results	Comments
1.	Acquire files to compile with and without errors (C++, FORTRAN, and Ada).	Record file names/path: <u>FORTRAN</u> No error: _____ Errors: _____ <u>C++</u> No error: _____ Errors: _____ <u>Ada</u> No error: _____ Errors: _____	All files for this test thread will be either supplied by HAIS, generated by the test team, or obtained from other sources.
2.	Acquire two sets of files to compare: one set identical, one set with differences.	Record file names/path: Identical: _____ Differences: _____ _____	
3.	Acquire a files to use the dynamic code checker on.	File name/path compliant with code checker: _____ File not compliant: _____	
4.	Acquire a files to use the static code checker on.	File name/path compliant with code checker: _____ File not compliant: _____	
5.	Acquire a document to utilize the viewing tool.	File name/path: _____	
6.	Acquire a product to utilize the visualization / graphic tool.	File name/path: _____	
7.	Start a UNIX script file to record test activities.	Script file is started, record filename here: _____	

Test Execution:

SFT05.1 SDP Toolkit Availability

This test case verifies the availability of standard toolkit services at the user workstations. The test is repeated on both hardware platforms at each DAAC. The following compilers are being delivered at the indicated DAAC:

DAAC	C++	FORTRAN 77	Ada
EDC		X	
GSFC	X	X	
LaRC	X	X	X
MSFC	X	X	

Therefore, only the test associated with the compilers at the DAAC being tested need to be executed. Utilizing the Ada compiler at EDC will not work so that test step can be omitted when testing the EDC DAAC.

Step	Action	Expected Results	Comments
1.	Logon to an AI&T workstation.	Access granted.	
2.	Compile the FORTRAN files listed in the Test Set-up (step 1).	The file with no errors compiles without errors. The errors are detected in the file with errors.	
3.	Compile the C++ files listed in the Test Set-up (step 1).	The file with no errors compiles without errors. The errors are detected in the file with errors.	
4.	Compile the Ada files listed in the Test Set-up (step 1).	The file with no errors compiles without errors. The errors are detected in the file with errors.	
5.	Use the file comparison utility on the identical files (Test Set-up step 2).	No differences are found.	
6.	Use the file comparison utility on the files with differences (Test set-up step 2).	Differences are found.	

Step	Action	Expected Results	Comments
7.	Use the dynamic code checker on the compliant file listed in the test set-up (step 3).	The file is noted as being compliant.	
8.	Use the dynamic code checker on the non-compliant file listed in the test set-up (step 3).	The file is noted as being non-compliant and the code is marked.	
9.	Use the static code checker on the compliant file listed in the test set-up (step 4).	The file is noted as being compliant.	
10.	Use the static code checker on the non-compliant file listed in the test set-up (step 4).	The file is noted as being non-compliant and the code is marked.	
11.	Use the document viewing tool on the file listed in the test set-up (step 5).	The document is able to be viewed.	
12.	Use the product visualization/graphics tool on the product listed in the test set-up (step 6).	The product is able to be visualized.	

Post Test Analysis

Step	Action	Expected Results	Comments
1.	Examine history log.	All functions utilized during the test appear in the history log in sequence.	

SFT05.2 ECS Standard Services Availability

This test case verifies the availability of ECS standard services at the user workstations.

Step	Action	Expected Results	Comments
1.	Log on to two user workstations, one local and one remote.	Access granted.	
2.	Access the Email service and	Message is sent and	

Step	Action	Expected Results	Comments
	perform the following functions: a - compose a message with return receipt to a user logged onto another DAAC workstations . b - send the message and receive the receipt. c - the DAAC receiving the message replies to the message. d - originating DAAC receives response.	received at all DAACs. a - return receipts is received at originating DAAC. b - receipt of message delivered received. c - response to the message is received. d - response received.	
3.	Access the Bulletin Board Service and perform the following functions: a - Read a message. b - Post a reply to a message. c - Post a new message.	The bulletin board can be accessed and messages can be read, posted, and replied to.	
4.	Access the internet, from the DAAC workstation, utilizing the WWW browser and the URL address "http://fairmont.ivv.nasa.gov/".	Access to the internet is granted and the NASA IV&V homepage is displayed.	

Post Test Analysis

No post test analysis is necessary for this test.

Test Termination:

Step	Action	Expected Results	Comments
1.	Log off the ECS.	Return to UNIX prompt.	
2.	At the UNIX prompt enter the command to print history logs for all local and remote systems used.	History log printed.	